

SCOTLAND

Curriculum Links and Differentiation Ideas for the Principia Space Diary

Image: A birdseye view of Edinburgh from space, taken by Tim Peake, ESA/NASA



Pre-launch Chapter: Astronauts Wanted!

Activity 0.1: Astronaut Workout
<p>Early Level</p> <p>Curriculum links: Health and wellbeing: Physical health – HWB 0-15a, HWB 0-27a, HWB 0-28a Mental and emotional wellbeing: HWB 0-02a, HWB 0-04a, HWB 0-06a Mathematics: Time – MNU 0-10a; Mathematics: Measure – MNU 0-11a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Adult led small groups as part of a PE lesson. An adult could complete the sheet with a group of children.
<p>First Level</p> <p>Curriculum links: Health and wellbeing: Physical health – HWB 0-15a, HWB 0-27a, HWB 0-28a Mental and emotional wellbeing: HWB 0-02a, HWB 0-04a, HWB 0-06a Mathematics: Time – MNU 0-10a; Mathematics: Measure – MNU 0-11a Science: Biological systems, body systems and cells – SCN 1-12a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 2 – Adult led in PE lesson with adult completing worksheet to be displayed and looked at by the class.• Primary 3 – You could do this as a circuits lesson in PE and complete the information with a partner. It could also be done as part of a time lesson in class. Each child could complete on their own in class if run as part of a time lesson.• Primary 4 – Children should manage this independently and could do this in pairs and compare results in pairs and share the activity, which in turn could be fed back and compared to the class.

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Second Level

Curriculum links:

- Health and wellbeing: Physical health – HWB 2-15a, HWB 2-27a, HWB 2-8a
- Health and wellbeing: Mental and Emotional wellbeing – HWB 2-02a, HWB 2-04a, HWB 2-06a
- Mathematics: Time – MNU 2-10b
- Mathematics: Measure – MNU 2-11a, MNU 2-11b
- Science: Biological systems: Body systems and cells – SCN 2-12a, SCN 2-12b

Differentiation ideas:

Due to the nature of this activity, pupils in P5-P7 would be able to do this activity independently or as a pair/share activity. They could also come up with ideas to extend the exercise or could do some of them on a daily/weekly basis for a few weeks in PE and try to improve their times.

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Activity 0.2: Your Body in Space
<p>Early Level</p> <p>Curriculum links: No curriculum links</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• At this stage it could be a fun activity to help develop memory skills.
<p>First Level</p> <p>Curriculum links: Science: Forces, Electricity and waves – SCN 1-07a, Science: Biological systems body systems and cells – SCN 1-12a Health and wellbeing: Physical health – HWB 1-15a, HWB 1-28a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 2 and Primary 3: Possible group quiz and compare answers afterwards.• Primary 4 could answer questions independently and compare answers within their group and then with the whole class.
<p>Second Level</p> <p>Curriculum links:</p> <ul style="list-style-type: none">• Science: Biological systems, Body systems and cells – SCN 2-12a, SCN 2-12b• Health and wellbeing: Physical wellbeing – HWB 2-15a• Health and wellbeing: Planning for choice and change – HWB 2-20a <p>Differentiation ideas:</p> <ul style="list-style-type: none">• All stages would be able to complete individually and pair/share.

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- Extend the activity into literacy by asking children to find the answers for themselves in a text.
- Use this activity to raise discussion in P7 about career choices.

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Activity 0.3: Space Dinner

Early Level

Curriculum links:

Health and wellbeing: Nutrition – HWB 0-30a, HWB 0-29a, HWB 0-32a

Differentiation ideas:

- Make food with play dough, shop or market role-play to select appropriate foods.
- Develop motor skills by drawing the food, making it with play dough or cutting and sticking the correct foods on the plate.

First Level

Curriculum links:

Health and wellbeing: Nutrition – HWB 1-30a, HWB 1-30b, HWB 1-32a, HWB 1-28a

Literacy: Reading, finding and using information – LIT 1-14a

Differentiation ideas:

- Primary 2 – Use play dough to make the foods, draw the foods and colour them using the correct colours to develop motor skills, cut and stick pictures on in the correct places.
- Primary 3 – Children could draw the foods or have pictures to discuss in groups and decide which ones should go on the plates and which ones should not.
- Primary 4 – Extend the learning by getting the children to do some reading on the correct eating choices and then complete the plate to check for understanding.

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Second Level

Curriculum links:

- Literacy: Finding and using information – Lit 2-14a
- Health and wellbeing: Nutrition and health – HWB 2-28a, HWB 2-30a, HWB 2-32a

Differentiation ideas:

- P5/P6: Reading activity and feed back their choices of food to their partner/group.
- P7: Independent reading task and feed back to class to discuss why they have chosen the foods that they have and what health benefits they would have to the astronauts.

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Activity 0.4: Design Your Spacesuit!
<p>Early Level</p> <p>Curriculum links:</p> <p>Expressive arts: Art and Design – EXA 0-2a, EXA 0-06a</p> <p>Develop motor skills</p> <p>Develop problem solving skills</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Children could use different materials to make the spacesuit. They could talk about their choices with an adult. No expectation to have the spacesuit correct or labelled at this stage.
<p>First Level</p> <p>Curriculum links:</p> <p>Science: Materials-properties and uses of substances – SCN 1-15a,</p> <p>Science: Body systems and cells – SCN 1-12a</p> <p>Technologies: TCH 1-01a, TCH1-01b, TCH 1-11a, TCH 1-11b, TCH 1-13b, TCH 1-14a, TCH1-14b</p> <p>Health and wellbeing: Social wellbeing – HWB 1-11a,</p> <p>Health and wellbeing: Planning for choices and change – HWB 1-19a, HWB 1-20a</p> <p>Literacy: Reading, finding and using information – Lit 1-14a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 2 – Ask students to use different materials to make the spacesuit on their own and talk about their choices afterwards to their group. Adults could write about the students’ choices and this could go along with their designs.• Primary 3 – Students could use the internet to find information about spacesuits and design their spacesuit after this. Children could verbally name different parts.• Primary 4 – As above but children could also label different parts of the spacesuit and talk about what they do.
<p>Second Level</p>

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Curriculum links:

Health and wellbeing: Social wellbeing – HWB 2-11a

Health and wellbeing: Planning for choices and change – HWB 2-19a, HWB 2-20a

Literacy: Reading, Finding and using information – LIT 2-14a

Technologies: TCH 2-01a, TCH 2-01b, TCH 2-11a, TCH 2-11b

Differentiation ideas:

- Children in P5-P7 could do this as a child-led project where they find out about spacesuits using books and ICT where appropriate. They could prepare a fact file about spacesuits, labelling the different parts and explaining what they do. They could then include a spacesuit they have designed and talk about the materials they have chosen and why. Older children could present this to their peers and take on feedback to improve their design.

Chapter 1: Goodbye to Earth

Activity 1.1: Time for Launch

Early Level

Curriculum links:

Mathematics: Number, Money and measure – Time MNU 0-10a

Literacy: Reading: Finding and using information – LIT 0-14a

Differentiation ideas:

- Primary 1 – Introduction as to why time is important in the real world and the kinds of things it is used for. Children could complete the storyboard and the teacher could complete the clocks with the class.

First Level

Curriculum links:

Mathematics: Number, Money and Measure – Time MNU 1-10a, MNU 1-10c

Literacy: Reading: Finding and using information – LIT 1-14a

Differentiation ideas:

- Primary 2 – Discussion on why time is important. Work with the teacher to complete the clocks as on the hour and half past is done at this stage. Children could read the information with support to complete the storyboards. Less able readers could listen to the information being read aloud and talk about the key parts.
- Primary 3 – Some children would be able to complete the clocks with support. Most children could read the information and complete the storyboards independently. Others could read with an adult or listen to information to pick out the key parts.
- Primary 4 – Most children should manage the activity with some support on the addition of time. Most children could read the text independently and complete the storyboards. Less able readers could listen to the text being read aloud.

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Second Level

Curriculum links:

Mathematics: Number, Money and Measure – Time MNU 2-10a

Literacy: Reading – Finding and using information – LIT 2-14a

Differentiation ideas:

- More able or older students could complete the task independently without support. They could compare their completed work with a partner and peer assess each other's work.
- Less able or younger students could complete the storyboards independently and have some support with adding time. The use of clocks would help.

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Activity 1.2: 8 minutes to Space

Early Level

Curriculum links:

Mathematics: Number, Money and Measure – Time MNU 0-10a

Literacy: Writing: Organising and using information – LIT 0-26a

Differentiation ideas:

- Primary 1 – Children can talk about what they might see, hear, taste, smell and feel on the way up to Space. They could complete sentences that begin with 'I can see...', 'I can hear...', 'I can taste...', 'I can smell...', 'I can feel...'.

First Level

Curriculum links:

Mathematics: Number, Money and Measure – Time MNU 1-10c

Literacy: Writing: Creating texts – ENG 1-30a

Differentiation ideas:

- Primary 2 – Children could also relate to their senses and use a connective to expand their sentences.
- Primary 3 – Children could write their own sentences. They could also time other activities to see what else takes eight minutes.
- Primary 4 – Children would be encouraged to expand on their sentences using a variety of adjectives to describe what they would be experiencing.

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Second Level

Curriculum links:

Mathematics: Number, money and measure – Time MNU 2-10b

Literacy: Creating texts – ENG 2-30a

Differentiation ideas:

- Children would complete a brainstorming activity using adjectives to describe what they would see, smell, taste, hear and feel. They would then use their notes to write a recount type text of what they would they experienced. Differentiation is by outcome. The older or more able the child, the more they would be expected to write using relevant adjectives, connectives, openers and punctuation.

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Activity 1.3: Fast-track Rendezvous

Early Level

Curriculum links:

Literacy: Reading: Understanding, analysing and evaluating – LIT 0-16a

Literacy: Talking and listening: Finding and using information – LIT 0-04a

Would also allow children to develop motor skills, formation of letters and discussion skills.

Differentiation ideas:

- Primary 1 – Pupils could listen to the information being read aloud and verbally complete the missing words. They could also have the words written in the spaces and they could write on top or below them to practice letter formation. Children could use the dot-to-dot orbit maze to practice staying on the line.

First Level

Curriculum links:

Literacy: Reading: Tools for reading – ENG 1-12a, LIT 1-13a

Literacy: Finding and using information – LIT 1-14a

Literacy: Understanding, analysing and evaluating – LIT 1-16a, ENG 1-17a

Literacy: Listening and talking: Finding and using information – LIT 1-04a

Differentiation ideas:

- More able readers would be able to complete the activity independently and could check with a classmate if they get stuck. Children could compare their answers with others at the end of the lesson.
- Less able readers could work with an adult supporting reading and could complete the answers as a group, discussing the information to check for understanding.

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Second Level

Curriculum links:

Literacy: Reading: Tools for reading – ENG 2-12a

Literacy: Finding and using information – LIT 2-14a

Literacy: Understanding, analysing and evaluating – LIT 2-16a, ENG 2-17a

Literacy: Listening and talking: Finding and using information – LIT 2-04a

Differentiation ideas:

- More able or older pupils should be able to complete the task independently. They could then do their own research and make up their own questions for a partner to read and complete.
- Less able or younger pupils could complete with support where necessary and focus on listening and talking to ensure understanding.

Chapter 2: Space Chat

Activity 2.1: United in Space

Early Level

Curriculum links:

Literacy: Tools for reading – LIT 0-21a

Literacy: Finding and using information – LIT 0-14a

Health and wellbeing: Social wellbeing – HWB 0-09a

Differentiation ideas:

- Primary 1 – Children could talk about the similarities and differences between the astronauts. They could compare this to when someone from another country joins their school, the difficulties they face and the support they need. Children could listen to the information and complete the fact file for one country with the teacher.

First Level

Curriculum links:

Literacy: Reading: Tools for reading – ENG 1-12a, LIT 1-13a

Literacy: Finding and using information – LIT 1-14a

Social studies: People, past events and Societies – SOC 1-06a

Health and wellbeing: Social Wellbeing – HWB 1-09a

Differentiation ideas:

- Primary 2 – Children could listen to the information being read aloud and complete a fact file for a country in small groups. They would need support to take some notes and possibly a word mat to help with spelling. They could discuss the similarities and differences the astronauts would have and how they could overcome these.
- Primary 3 – Some children could read the information with support and complete a fact file for one country using ICT to do their own research as well.

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- Primary 4 – Most children could complete the fact file on their own or in pairs with a more and less able reader together. They could do their own research on the country.

Second Level

Curriculum links:

Literacy: Reading: Tools for reading – LIT 2-13a, ENG 2-12a

Literacy: Finding and using information – LIT 2-14a

Social Studies: People, past events and societies – SOC 1-06a

Social Studies: People, society, economy and business – SOC 2-19a

Health and wellbeing: Social wellbeing – HWB 2-09a

Modern languages: Responsible Citizens who have a growing awareness of life in another society and of the issues facing citizens in the countries where their new language is spoken.

Differentiation ideas:

- More able or older pupils could complete the task independently. They could complete fact files for all countries using ICT. The children could also research one of the astronauts, where they are from and give a short presentation to their peers on the person. They could also discuss the wants and needs of people from different societies. Children could also learn some German or Russian phrases as part of their learning.
- Less able or younger pupils do as above but with more support. They could work in groups to complete the fact files and do research on one of the astronauts.

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Activity 2.2: Breaking News!

Early Level

Curriculum links:

Literacy: Writing: Organising and using information – LIT 0-26a

Literacy: Tools for talking and listening – LIT 0-02a

Expressive arts: Drama – EXA 0-12a, EXA 0-13a, EXA 0-14a, EXA 0-15a

Differentiation ideas:

- Primary 1 – Children could role-play the activity in pairs. One child could be a journalist and the other could be Tim. They could present their drama to the class. Children could then write their newspaper reports or stick pre-written sentences on with a picture.

First Level

Curriculum links:

Literacy: Tools for writing – LIT 1-24a

Literacy: Organising and using information – LIT 1-26a

Literacy: Creating texts – LIT 1-28a, LIT 1-29a, ENG 1-30a

Literacy: Talking and listening: Tools for listening – LIT 1-02a

Literacy: Understanding, analysing and evaluating – LIT 1-07a

Literacy: Creating texts – LIT 1-09a

Expressive arts: Drama – EXA 1-12a, EXA 1-14a, EXA 1-15a

Differentiation ideas:

- Primary 2 – As with primary 1 but children could write independently with sentence starters already given.
- Primary 3/Primary 4 – Pupils will be able to write with increasing independence. Differentiation by outcome.

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Second Level

Curriculum links:

Literacy: Tools for writing – LIT 2-24a,

Literacy: Organising and using information – LIT 2-26a

Literacy: Creating texts – ENG 2-27a, LIT 2-28a, LIT 2-29a, ENG 2-30a

Literacy: Talking and listening: Tools for listening – LIT 2-02a

Literacy: Understanding, analysing and evaluating – LIT 2-07a

Literacy: Creating texts – LIT 2-09a

Expressive arts: Drama – EXA 2-12a, EXA 2-14a, EXA 2-15a

Differentiation ideas:

- More able children could write a lengthier newspaper article and read it aloud to their peers.
- Less able or younger children could do a role-play and use this as a stimulus to write their newspaper article.

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Activity 2.3: Earth to Principia
<p>Early Level</p> <p>Curriculum links:</p> <p>No direct curriculum links. Activities would develop two of the four capacities of A Curriculum for Excellence. Successful learners who have enthusiasm and motivation to learn and who have determination to reach high standards of achievement. Effective contributors, who use their skills to create and develop, solve problems and apply critical thinking in new contexts.</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 1 could do this activity with a much simpler message to decode. Pictures could be used as a code.
<p>First Level</p> <p>Curriculum links:</p> <p>No direct curriculum links. Activities would develop two of the four capacities of A Curriculum for Excellence. Successful learners who have enthusiasm and motivation to learn and who have determination to reach high standards of achievement. Effective contributors, who use their skills to create and develop, solve problems and apply critical thinking in new contexts.</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● More able children could crack the code in groups. They could extend this by creating their own message and code.● Less able children could have more letters in the code or a simpler message to crack.
<p>Second Level</p> <p>Curriculum links:</p> <p>No direct curriculum links. Activities would develop two of the four capacities of A Curriculum for Excellence. Successful learners who have enthusiasm and motivation to learn and who have determination to reach high standards of achievement. Effective contributors, who use their skills to create and develop, solve problems and apply critical thinking in new contexts.</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● More able children could crack the code and then explore other ways in which codes are used. They could then make

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their own unique code and message.

- Less able children could crack the code and research how and why other codes are used.

Chapter 3: I Spy...

Activity 3.1: Your New Home

Early Level

Curriculum links:

Mathematics: Shape, position and movement: Properties of 2D shapes and 3D objects – MTH 0-16a

Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 0-12a, TCH 0-14a

Differentiation ideas:

- Primary 1 – Use Lego or 3D building materials like Polygon to build a model of the ISS.

First Level

Curriculum links:

Mathematics: Shape, position and movement: Properties of 2D shapes and 3D objects – MTH 1-16a, MTH 2-16b

Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 1-12a TCH 1-13a, TCH 1-14a, TCH 1-14b

Differentiation ideas:

- Primary 2/Primary 3 – Explore the names of 2D and 3D shapes used in the ISS. Discuss the properties of these shapes and why they might have been used. Children could build models using 3D building materials such as Lego or Polygon.
- Primary 4 – Should be able to recognise and name most of the 2D and 3D shapes and discuss their properties. They could also use 3D building materials or scrap materials to build models.

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Second Level

Curriculum links:

Mathematics: Shape, position and movement: Properties of 2D shapes and 3D objects – MTH 2-16a, MTH 2-16c

Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 2-12a, TCH 2-13a, TCH 2-14a, TCH 2-14b

Differentiation ideas:

- More able or older children could label a picture of the ISS with the correct shape names that they can see. They could discuss the properties of these shapes and their effectiveness in making a strong structure. They could gather scrap materials such as kitchen roll holders and shoe boxes etc to construct their own model.
- Less able or younger children could label a diagram of the ISS with the names of shapes that they know. They could use 3D building materials to make a model or use scrap materials with support.

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Activity 3.2: Draw Your Own ISS

KS1

Curriculum links:

Language and Literacy: Transcription

Maths: Number fluency; Shape, space and measure

If model making:

Art: Working with different media

Design & Technology: Design – create models; Make – construct and select from a wide range of materials, evaluate

Science: Materials

SMSC: Team work

Differentiation ideas:

- Make a junk model of your ISS – discuss the different places where the astronauts live and work. This could be done as a small group activity encouraging discussion and collaboration; children may then present their space station to their peers. It could also be an enhanced provision opportunity, allowing the children to creatively develop their own ideas about how an ISS would work.

Lower Key Stage 2

Curriculum links:

Language and Literacy: Transcription

Maths: Number Fluency; Shape, Space and Measure.

If model making:

Art: Working with different media

Design & Technology: Design – create models; Make – construct and select from a wide range of materials, evaluate

Science: Materials

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SMSC: Team work

Differentiation ideas:

- Collaborate in small groups to make a part for a class ISS. Research in further detail to find out the specific features of the component and how the astronauts would work/live/use that space for their research. Build it to fit onto the whole-class model.

Upper Key Stage 2

Curriculum links:

Language and Literacy: Transcription

Maths: Number fluency; Shape, space and measure

If researching and presenting:

Design & Technology: Design – create models; Make – construct and select from a wide range of materials, evaluate

Language and Literacy: Composition and communication

Science: Working scientifically – ask questions, using evidence

Computing (if using internet for research): Importance of using computer networks safely and responsibly

Language and Literacy (If using books for research): Comprehension, select and retrieve information

Differentiation ideas:

- Use this as an opportunity for pupils to evaluate and improve their model from the previous activity.
- Generate Questions: Come together in small groups or as a class and ask pupils what they are curious about in relation to the ISS. Those that are able to can then use resources available to complete some more detailed research on their own questions. This will give them the opportunity to ask and answer their own questions, just as real scientists do. Visit https://www.nasa.gov/centers/johnson/pdf/569954main_astronaut%20FAQ.pdf to see students questions answered by NASA astronauts to trigger questions – good for a stimulus. Perhaps as a card sort to match Q and A.

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Activity 3.3: Looking at the Earth from Space

Early Level

Curriculum links:

Science: Space – SCN 0-06a

Social subjects: People, place and environment – SOC 0-08a, SOC 0-12a

Literacy: Writing: Organising and using information – LIT 0-26a

Differentiation ideas:

- Primary 1 – Talk about different weather that we experience in Scotland. How is this different or the same as places they have been on holiday? As a class the children could choose a place they have never been to before, discuss how it looks and how they think it feels. Children could draw or paint the place they have chosen.

First Level

Curriculum links:

Science: Space – SCN 1-06a

Social subjects: People, place and environment – SOC 1-12a, SOC 1-12b SOC 1-13b

Literacy: Writing: Organising and using information – LIT 1-26a

Literacy: Creating texts – ENG 1-30a

Differentiation ideas:

- Primary 2 – Children could begin to compare the weather seen in other places around the world to what we have here. They could also re-create the picture of another place using paint or drawing equipment.
- Primary 3 – Children could find out more information about weather patterns around the world. Looking at the pictures from space they could try to recognise continents and countries and talk about the weather patterns they can see.
- Primary 4 – As above. Children could then role-play as weather reporters and do a mini weather report for a place of their choice. This would involve drama and art outcomes.

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Second Level

Curriculum links:

Science: Space – SCN 2-06a

Social Subjects: People, place and environment – SOC 2-12a

Literacy: Writing: Organising and using information – LIT 2-26a

Literacy: Creating texts – ENG 2-30a

Differentiation ideas:

- More able or older pupils could create fact files about different weather systems around the world and how they come about. They could also track the weather of a chosen place over the course of a week. They could do a weather report as part of a drama perhaps in the modern language they are learning at school.
- Less able or younger children could use ICT to help create a fact file on a specific weather system. They could then present this to the class.

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Activity 3.4: The Solar System
<p>Early Level</p> <p>Curriculum links: Science: Space – SCN 0-06a Expressive arts: Art and design – EXA 0-2a, EXA 0-04a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 1 – Colour in the planets and try to write their names independently.
<p>First Level</p> <p>Curriculum links: Science: Space – SCN 1-06a Literacy: Writing: Creating texts – LIT 1-28a, LIT 1-29a Expressive arts: Art and design – EXA 1-03a, EXA 1-04a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 2 – Listen to descriptions of the planets and colour them appropriately. Students could name them independently and try to remember some basic facts about some of the planets.• Primary 3/Primary 4 – Create a fact file for a planet using ICT.
<p>Second Level</p> <p>Curriculum links: Science: Space – SCN 2-06a Literacy: Writing: Creating texts – LIT 2-28a Expressive arts: Art and design – EXA 2-04a, EXA 2-03a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• More able or older children could create a fact file of our Solar System. They could do this using ICT where

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appropriate.

- Less able or younger children could work in groups to create a fact file of the solar system and choose one or two features of our solar system to focus on. They could use ICT where appropriate.

Chapter 4: Space for Science

Activity 4.1: Space Gardening
<p>Early level</p> <p>Curriculum links: Health and wellbeing: Mental and emotional wellbeing – HWB 0-02a, HWB 0-04a, Health and wellbeing: Physical wellbeing – HWB 0-15a, Health and wellbeing: Nutrition – HWB 0-30a, HWB 0-32a Science: Investigative and enquiry skills</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 1 could grow broad beans and talk about what they need to grow and how this would be difficult to do in space.
<p>First Level</p> <p>Curriculum links: Science: Biodiversity and Interdependence – SCN 1-03a Technology: Food and textiles contexts for developing technological skills and knowledge – TCH 1-11a Social studies: People, place and environment – SOC 1-13b Health and wellbeing: Mental and emotional wellbeing – HWB 1-02a, HWB 1-04a, Health and wellbeing: Physical wellbeing – HWB 1-15a, Health and wellbeing: Nutrition – HWB 1-30a, HWB 1-30b, HWB 1-32a, HWB 1-35a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">• Primary 2 – Children could grow their own plant from a seed. A big seed that can be grown in a clear plastic cup with wet tissue or cotton wool instead soil so children can watch the growing process, in effect making their own Space garden.• Primary 3 – Children could relate this to nutrition and healthy eating and make up a recipe using foods that could be

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grown in Space. This could be words or pictures dependent on the ability of the children.

- Primary 4 – Children could relate to nutrition and healthy eating and write a recipe containing foods that could be grown in Space.

Second Level

Curriculum links:

Science: Biodiversity and Interdependence – SCN 2-02a, SCN 2-02b

Science: Inheritance – SCN 2-14a

Technology: Food and textiles contexts for developing technological skills and knowledge – TCH 2-11a

Health and wellbeing: Mental and emotional wellbeing – HWB 2-02a, HWB 2-04a

Health and wellbeing: Physical wellbeing – HWB 2-15a

Health and wellbeing: Nutrition – HWB 2-30a, HWB 2-32a, HWB 2-35a

Differentiation ideas:

- Primary 5 – Children could extend learning to outdoors and grow plants in school garden. This could be used to explore how gardening can help with feelings and emotions. They could also grow fruits and vegetables from seeds and track how long this would take.
- Primary 6 – Children could keep track of food that they are growing at their different stages of development and explore why the astronauts would need to know this kind of information.
- Primary 7 – Could further extend learning by getting involved with a local allotment if possible.

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Activity 4.2: Make a Splash in Space
<p>Early level</p> <p>Curriculum links: Science: Processes of the planet – SCN 0-05a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 1 – Limit to why water is important as it is essential to life. List things verbally that we use water for; experiment with how water changes state according to the temperature of the environment.
<p>First Level</p> <p>Curriculum links: Science: Processes of the planet – SCN 1-05a, Science: Inquiry and investigative skills</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 2-4 children could conduct experiments on how water changes state. They could also record how important water is in the growth of their plants from the previous lesson.
<p>Second Level</p> <p>Curriculum links: Science: Processes of the planet – SCN 2-05a, Science: Chemical changes – SCN 2-18a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 5 – Create a poster of the water cycle both on earth and in the ISS.

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- Primary 6 – Make comparisons between the water cycle on earth and on the ISS; children could make a comparison table for similarities and differences
- Primary 7 – Look at water treatment processes, could extend learning with a visit to water treatment facility.

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Activity 4.3: Experimentally Yours

Early Level

Curriculum links:

Science: Inquiry and Investigative skills

Maths: Information handling, data and analysis – MNU 0-02a, MNU 0-20b, MNU 0-21a

Literacy: Talking and listening, finding and using information – LIT 0-04a

Differentiation ideas:

- Primary 1 – Children could discuss different experiments and then decide on one to do with teacher support. Teacher could carry out the investigation with children helping. Teacher would talk through the process and show children how to complete the report at a very basic level.

First Level

Curriculum links:

Science: Inquiry and investigative skills

Maths: Information handling, data and analysis – MNU 1-20a, MNU 1-20b, MNU 1-21a

Literacy: Talking and listening, finding and using information – LIT 1-04a, LIT 1-05a

Literacy: Writing: Creating texts – LIT 1-28a, LIT 1-29a

Differentiation ideas:

- Primary 2 – Much like primary 1 lesson but children could complete aspects of the report individually as a writing task.
- Primary 3 – Children could carry out the investigation in small groups and complete the report as a group.
- Primary 4 – Children could carry out in pairs and complete the report.

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Second Level

Curriculum links:

- Science: Inquiry and investigative skills
- Maths: Information handling, data and analysis – MNU 2-02a, MNU 2-20b, MNU 2-21a
- Literacy: Listening and talking, finding and using information – LIT 2-05a
- Literacy: Writing: Creating texts – LIT 2-28a

Differentiation ideas:

- More able children could decide on an appropriate investigation and gather resources with support. They could carry out their investigation and complete their report independently. They could report their findings back to the class.
- Less able children could decide on an appropriate investigation with support and gather appropriate resources with support. They could carry out their investigation with supervision and use a writing frame to complete their report.

Chapter 5: To Boldly Go

Activity 5.1: Making History

Early Level

Curriculum links:

Social studies: People, past events and societies – SOC 0-01a, SOC 0-04a

Science: Space – SCN 0-06a

Science: Topical Science – SCN 0-20a

Technologies: ICT to enhance learning – TCH 0-04a, TCH 0-04b

Literacy: Reading: Finding and using information – LIT 0-14a

Literacy: Writing: Organising and using information – LIT 0-26a

Differentiation ideas:

- Primary 1 – Introduce the concept of a timeline, children put their birthdays on a large timeline at front of class or in the playground. Children could complete with a parent as part of a home learning activity.

First Level

Curriculum links:

Social studies: People, past events and societies – SOC 1-03a, COS 1-04a, SOC 1-06a

Science: Topical science – SCN 1-20a

Technologies: ICT to enhance learning – TCH 1-03b, TCH 1-04a

Literacy: Reading: Finding and using information – LIT 1-14a

Literacy: Writing: Organising and using information – LIT 1-26a

Differentiation ideas:

- Primary 2 – Children could complete as part of a home learning task and with a parent/guardian find out more information about important developments in space exploration since children were born.

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- Primary 3 – Children could make a large display timeline for the class and add other important historical events to it.
- Primary 4 – Children could do their own research about the dates and find out what happened and who was involved and add their research on post it notes to the timeline.

Second Level

Curriculum links:

Social studies: People, past events and societies – SOC 2-06a

Science: Topical science – SCN 2-20a

Technologies: ICT to enhance learning – TCH 2-03b, TCH 2-04a

Literacy: Writing: Organising and using information – LIT 2-26a

Literacy: Creating texts – LIT 2-28a

Differentiation ideas:

- More able children could do independent research on each event and create a fact file for this to be added to a class timeline.
- Less able children could be given some information about the history and the important dates and could add these in on a writing frame fact file to be added to a class time line.

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Activity 5.2: Space Habitat
<p>Early Level</p> <p>Curriculum links:</p> <p>Science: Biodiversity and interdependence – SCN 0-01a</p> <p>Science: Processes of the planet – SCN 0-05a</p> <p>Science: Space – SCN 0-6a</p> <p>Science: Properties and uses of substances – SCN 0-15a</p> <p>Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 0-12a, TCH 0-15a</p> <p>Expressive arts: Art and Design – EXA 0-02a, EXA 0-04a, EXA 0-06a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 1 – Linked to science and the seven things necessary for life, children could draw a basic space city and wouldn't be expected to have a realistic interpretation in terms of atmosphere etc. Children could also model this out of play dough or Lego. Children could also extend skill development by using a paint type program to create their city on a computer.
<p>First Level</p> <p>Curriculum links:</p> <p>Science: Energy sources and sustainability – SCN 1-04a</p> <p>Science: Processes of the planet – SCN 1-05a</p> <p>Science: Space – SCN 1-06a</p> <p>Science: Properties and uses of substances – SCN 1-15a</p> <p>Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 1-12a, TCH 1-13a, TCH 1-14a, TCH 1-14b, TCH 1-15a</p> <p>Expressive arts: Art and Design – EXA 1-02a, EXA 1-03a, EXA 1-04a, EXA 1-06a</p> <p>Differentiation ideas:</p>

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- Primary 2 – As per primary 1 but children would be able to talk about their design and why they have chosen design aspects in relation to atmosphere, breathing in oxygen, growing plants etc.
- Primary 3 – Children could focus on the design aspect and use this to encourage people to settle in their new city.
- Primary 4 – As per primary 3, with a short explanation to their partner or group about why people would like to live in their space city.

Second Level

Curriculum links:

Science: Biodiversity and interdependence – SCN 2-01a, SCN 2-02a

Science: Energy sources and sustainability – SCN 2-04a

Science: Processes of the planet – SCN 2-05a

Science: Space – SCN 2-06a

Technologies: Craft, design, engineering and graphics contexts for developing technological skills and knowledge – TCH 2-13a, TCH 2-14a, TCH 2-14b TCH 2-15a

Expressive arts: Art and design – EXA 2-02a, EXA 2-03a, EXA 2-04a, EXA 2-06a

Social studies: People, place and environment – SOC 2-08a

Differentiation ideas:

- More able students could use this as group collaborative project. Each child could be responsible for a certain aspect after brainstorming what would be needed in the city to sustain life and for people to want to live there. Someone could draw, make a model or use a computer program to create the city, someone could describe the features and how they would sustain life and someone could be responsible for an advert to persuade people to go there. They could then take it in turns to tell the other groups about their city and what they were responsible for creating.
- Less able students or younger students could work in pairs to create their city using either 3D materials, drawing equipment or a computer program. They could write a small label for the features they have designed and explain why they would be needed.

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Activity 5.3: Robots in Space

Early Level

Curriculum links:

Science: Electricity – SCN 0-09a

Technologies: Technological developments in society – TCH 0-01a

Differentiation ideas:

- Primary 1 – Discuss what robots are and what they do in Space, as a class decide on what they want their robot to do. Children could then draw or use 3D equipment to create their robot.

First Level

Curriculum links:

Science: Electricity – SCN 1-09a

Technologies: Technological developments in society – TCH 0-01a, TCH 1-01b

Differentiation ideas:

- Primary 2 – Discussion of what robots do in space. Brainstorm what kind of robot children could design and what it would do. Talk about what kinds of features it would have. Children could then draw this independently.
- Primary 3 – As above but children could then give feedback to others and use this to create a second improved design.
- Primary 4 – As above and children could add a description of their robot and what it would do. They could add a final design after discussion of how it could be improved.

CURRICULUM LINKS: SCOTLAND

Second Level

Curriculum links:

Science: Electricity – SCN 2-09a

Technologies: Technological developments in society – TCH 2-01a

Differentiation ideas:

- More able or older pupils could work in groups to find out about robots in Space. Together they could design and build a model of their robot create a description of what it could do.
- Younger or less able pupils could draw their own robots and write a description of what they do using a writing frame.

Chapter 6: Mission Finale

Activity 6.1: Re-entry
<p>Early Level</p> <p>Curriculum links: Science: Space – SCN 0-06a Science: Forces – SCN 0-07a Science: Properties and uses of substances – SCN 0-15a Mathematics: Shape, position and movement: Angle, symmetry and transformation – MTH 0-17a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 1 – Use a much simpler maze to reinforce fine motor skill development. Children could use a much larger scale maze and programme a Beebot to get to Earth.
<p>First Level</p> <p>Curriculum links: Science: Space – SCN 1-06a Science: Forces – SCN 1-07a, SCN 1-08a Science: Properties and uses of substances – SCN 1-15a Mathematics: Shape, position and movement: Angles, symmetry and transformation – MTH 1-17a, MTH 1-18a</p> <p>Differentiation ideas:</p> <ul style="list-style-type: none">● Primary 2 – Simpler maze, use a Beebot and a floor maze that children have to programme.● Primary 3 – Complete the maze, explore orbits of planets. Children can also explore what would happen if the Soyuz landed in water instead of the desert as planned. Would it sink or float? Open a discussion into materials that are used to build the Soyuz and their properties.● Primary 4 – As above and children could do their own research into the properties of some materials as a home learning activity.

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Second Level

Curriculum links:

Science: Space – SCN 2-06a,

Science: Forces – SCN 2-08a, SCN 2-08b

Mathematics: Shape, position and movement: Angle, symmetry and transformation – MTH 2-18a

Differentiation ideas:

- Older or more able children could design a more complex maze; they could possibly turn this into a board game for other children to play. They could also explore the area that the Soyuz landed in on a map and give its grid references. They could also talk about other areas that could have been potential land sites and why they were not picked.
- Younger or less able children could complete the maze and look at other potential landing sites and speculate as to why they were not picked.

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Activity 6.2: The Journey Home

Early Level

Curriculum links:

Mathematics: Number, money and measure: Estimation and rounding – MNU 0-01a

Mathematics: Time – MNU 0-10a

Mathematics: Measurement – MNU 0-11a

Differentiation ideas:

- Primary 1 – Children could pick their own landing site that is local and could draw a map back to their house. They could talk about what methods of transport they could use to get home.

First Level

Curriculum links:

Mathematics: Number, money and measure: Estimation and rounding – MNU 1-01a

Mathematics: Time – MNU 1-10a, MNU 1-10b, MNU 1-10c

Mathematics: Measurement – MNU 1-11a

Social studies: People, place and environment – SOC 1-14a

Differentiation ideas:

- Primary 2 – Children could estimate the distance between Kazakhstan and Scotland. They will have unrealistic estimations at this point but still a good way to introduce distance and scale. Children could then choose their own landing site in their local area and draw a map to their home. They could talk about what methods of transport they would use to get home and why.
- Primary 3 – Children could choose a landing site in Scotland. Using a map of Scotland they could draw their route back to their hometown.

CURRICULUM LINKS: SCOTLAND

Second Level

Curriculum links:

Mathematics: Number, money and measure: Estimation and rounding – MNU 2-01a

Mathematics: Time – MNU 2-10a, MNU 2-10b, MNU 2-10c

Mathematics: Measurement – MNU 2-11a, MNU 2-11b

Mathematics: Shape, position and movement: Angle, symmetry and transformation – MTH 2-17a, MTH 2-18a

Social studies: People, place and environment – SOC 2-14a

Differentiation ideas:

- More able or older children could draw a map of the world (roughly) and mark the shortest route back to their home. They could use various methods of transport and talk or write about their reasons for each. Children could then work out the distance travelled and how long it would take then using a real map.
- Younger or less able children could with teacher support work out the distance travelled and how long it would take. Using a map of the world they could mark the route to their homes.

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Activity 6.3: Send a Postcard to Space

Early Level

Curriculum links:

Health and Wellbeing: Mental and emotional wellbeing – HWB 0-01a, HWB 0-02a, HWB 0-04a

Literacy: Writing: Enjoyment and choice – LIT 0-20a

Literacy: Tools for writing – LIT 0-21a, LIT 0-21b

Literacy: Organising and using information – LIT 0-26a

Differentiation ideas:

- Primary 1 – Discuss how the astronauts would feel returning to Earth. After this set up a writing area and post office role-play. Children could write their post cards using word mats and modelled writing as a scaffold. They could design their own stamp and send it at their pretend post office.

First Level

Curriculum links:

Health and Wellbeing: Mental and emotional wellbeing – HWB 1-01a, HWB 1-02a, HWB 1-04a

Literacy: Writing: Enjoyment and choice – LIT 1-20a

Literacy: Tools for writing – LIT 1-22a, LIT 1-23a, LIT 1-24a

Literacy: Organising and using information – LIT 1-26a

Literacy: Creating texts – LIT 1-28a, LIT 1-24a, ENG 1-30a

Differentiation ideas:

- All stages would discuss the feelings of the astronauts when they came back to earth. They could talk about how they would cope with their emotions and feelings. The teacher could model how to write a postcard and discuss the types of things that they would include. Children would then do this as an independent writing activity. The differentiation would be made in the resources that are given such as word mats, writing frames and support. Expectations would also be different dependent on the age and stage of the children.

CURRICULUM LINKS: SCOTLAND

Second Level

Curriculum links:

Health and Wellbeing: Mental and emotional wellbeing – HWB 2-01a, HWB 2-02a, HWB 2-04a

Literacy: Writing: Enjoyment and choice – LIT 2-20a

Literacy: Tools for writing – LIT 2-22a, LIT 2-23a,

Literacy: Organising and using information – LIT 2-26a,

Literacy: Creating texts – ENG 2-27a, LIT 2-28a, ENG 2-30a

Differentiation ideas:

- All stages would discuss the feelings of the astronauts when they came back to earth. They could talk about how they would cope with their emotions and feelings. The teacher could model how to write a postcard and discuss the types of things that they would include. Children would then do this as an independent writing activity. The differentiation would be made in the resources that are given such as word mats, writing frames and support. Expectations would also be different dependent on the age and stage of the children.